

Appl. No. 10/660,417
Amdt. Dated 2/25/2004
Reply to Office Action of 2/12/2004

Amendments to the Specification

Please replace the paragraph on **page 5, lines 17-23** with the following amended paragraph:

The present invention provides an obturator for sealing between a projectile and a gun tube. The obturator includes at least one gun tube side cannelure ~~cannellure~~. At least one projectile side cannelure ~~cannellure~~ is located opposite to the at least one gun tube side cannelure ~~cannellure~~, where the at least one gun tube side cannelure ~~cannellure~~ is conformed to seal around the projectile. A tail protrudes from a rearward end of the at least one gun tube side cannelure ~~cannellure~~, where the tail makes contact with the bore to make a low pressure seal. Initially, the tail may or may not interfere with the bore.

Please replace the paragraph on **page 5, lines 28-31** with the following amended paragraph:

In one aspect of the invention an obturator for puller sabots and CTA's includes a flexible tail that provides an initial seal between tube and obturator. It also includes cannelures ~~cannellures~~ to provide significant seal all through the travel of a projectile through a gun tube.

Please replace the paragraph on **page 6, lines 5-8** with the following amended paragraph:

In another aspect an obturator constructed in accordance with the present invention includes a plurality of cannelures ~~cannellures~~ between the projectile and the obturator and also between the obturator and the gun tube, where the plurality of cannelures ~~cannellures~~ are combined with a moving wedge to generate very high contact pressures.

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Please replace the paragraph on page 6, line 25 through page 7, line 2 with the following amended paragraph:

Referring now to FIG. 2, there shown is a partial cross-sectional schematic view of an example of an obturator for sealing a gun tube constructed in accordance with one aspect of the present invention. An obturator 20 has at least one gun tube side cannelure ~~cannellure~~ 15 and at least one projectile side cannelure ~~cannellure~~ 17. A sabot 22 encases a flight projectile 24. The at least one gun tube side cannelure ~~cannellure~~ 15 may advantageously be conformed to seal around the obturator 20. Aft pressure will force the body of the obturator into the gap between the sabot 22 and the gun tube 26. This forward action of the obturator also helps the obturator fit a variety of smooth gun bore profiles. Generated upward pressures will ultimately blow the obturator off the projectile on muzzle exit.

Please replace the paragraph on page 7, line 30 through page 8, line 9 with the following amended paragraph:

The obturator 20 includes an upper surface 40 and a lower surface 42. The at least one gun tube side cannelure ~~cannellure~~ 15 and at least one projectile side cannelure ~~cannellure~~ 17 are designed into both the upper and lower surfaces of the obturator 20 so that the normal forces are converted into contact pressures that are much higher than the gas pressure that drives the obturator 20 forward. The result of this pressure multiplying design is that the surface contact pressures are able to shut out and seal the substantially lower pressure gas. As pressure increases or smooth gun bore diameter changes, the obturator is pressed forward or backward in the wedge-shaped gap as needed to accommodate these changes. The tail 32 helps insure that there are no significant leaks while the wedge 34 accommodates to any changing pressure or diametric conditions. Note that this design develops high sealing contact pressures without the need to rely on the adhesion of any secondary material such as JRTV.

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Please replace the paragraph **on page 8, lines 18-25** with the following amended paragraph:

Note that the at least one projectile side cannelure ~~cannellure~~ 17 is offset such that a first set of cannelures ~~cannellures~~ 50 contact a first surface 52 of the sabot 22, while a second set of cannelures ~~cannellures~~ 54 contact a second surface 56 of the sabot 22, where the second surface has a different inner diameter than the first surface so as to be offset from the first surface. In this way, the obturator 20 provides a redundant seal. That is, should one of the cannelure ~~cannellure~~ portions fail, the second, redundant surface maintains a seal. It is not necessary that the contact surfaces 52, 56 are parallel, but they could have different angles as measured relative to the smooth gun bore, for example.

Please replace the abstract **on page 13, lines 3-8** with the following amended paragraph:

An obturator having redundant surfaces for sealing between a projectile and a gun tube, where the obturator has at least one gun tube side cannelure ~~cannellure~~. At least one projectile side cannelure ~~cannellure~~ is located opposite to the at least one gun tube side cannelure ~~cannellure~~, where the at least one gun tube side cannelure ~~cannellure~~ is conformed to seal around the projectile. A tail protrudes from a rearward end of the at least one gun tube side cannelure ~~cannellure~~, where the tail makes an interference fit with the smooth gun bore to make a low pressure seal.